

Suburban attitudes towards the common brushtail possum *Trichosurus vulpecula* and the common ringtail possum *Pseudocheirus peregrinus* in the northern suburbs of Sydney

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ABSTRACT

Community based urban wildlife surveys are a two way exchange of information. They allow the researcher to gain information on urban wildlife living, or travelling through, private property that would normally remain inaccessible, whilst simultaneously informing the participants of current research and conservation initiatives. In Sydney's northern suburbs, 600 residences were surveyed on their attitudes to urban possums, with a return rate of 33 %. The majority of respondents were accepting of these animals on their properties and showed an enthusiasm to learn more on living peaceably with possums. A minority were found to have a high level of conflict with these animals. The relatively high proportion of respondents who admitted to removing possums from their properties (20 % of respondents), shows the extent to which human - possum interactions reach a point where peaceable coexistence is no longer possible. Despite this, when informed of a conservation initiative in the area to mitigate possum road-kill, significantly more respondents were willing to support the project than not.

Key words: urban wildlife, possums, brushtail, ringtail, *Trichosurus vulpecula*, *Pseudocheirus peregrinus*, human dimensions

Introduction

Surveys have shown that the Australian community appears to have an affinity with urban wildlife and the natural environment (Lunney *et al.* 2000; Miller 2003; Fitzgibbon and Jones 2006; Hill *et al.* 2007). Community-based surveys are one of the few ways to gain information about wildlife activity on private property (Lunney *et al.* 2000), particularly in urban areas where traditional animal survey methodologies (e.g. trapping and spotlighting) may prove difficult. Not only do surveys elicit information from the public, but they are also a good way of disseminating information on intended management plans and of creating awareness and discussion around conservation issues (Lunney *et al.* 2000). Survey data may indicate both affinities and antipathies towards wildlife, providing valuable insights into the nature of any conflicts with wildlife. This information can then be incorporated into public education and/or wildlife management actions to ameliorate this conflict. If we are to successfully manage urban wildlife, we need to understand people's attitudes towards it.

Both generalist herbivores, the Common Brushtail Possum *Trichosurus vulpecula* and the Common Ringtail Possum *Pseudocheirus peregrinus*, have adapted to life in close proximity to humans in the greener urban areas of our cities. They browse from a large variety of both native and introduced plant species (Kerle 2001; DeLacey and Chamberlain 2007) allowing them to expand their range. Increased urbanisation and habitat fragmentation brings possums into more frequent contact with people as possums may utilise human dwellings

in the absence of suitable natural den sites. In some sections of the community, possums, particularly brushtail possums, are lambasted for making their homes in roof cavities (thus creating noise and mess) and for causing damage to suburban garden plants; creating conflict and aggravation to residents (Mathews *et al.* 2004; Eymann *et al.* 2006; Wilks *et al.* 2008). FitzGibbon and Jones (2006) suggest that such human-wildlife conflicts may cause a "heightened awareness" of a species' presence, thus creating a bias in a person's recounting of an experience with that species. This may intensify the negative perceptions of the animal in the minds of those people who have had human-possum conflicts. Although brushtail possums have been reported as "... urban pests ... whose populations are literally going through the roof" (Lunney and Burgin 2004 p. 230), there are no definitive records of abundance for either possum species in urban areas (Statham and Statham 1997; Matthews *et al.* 2004; Eymann *et al.* 2006).

Through questionnaires, Hill *et al* (2007) investigated the causes of human-possum conflicts experienced by residents of the northern Sydney suburb of Mosman. They discovered that negative attitudes towards possums were strongly correlated with possums residing in people's roof spaces. The authors also uncovered a general lack of knowledge about possum biology and on how to coexist peaceably with them (Hill *et al.* 2007). Open-ended interviewing conducted by Wilks *et al* (2008) confirmed that attitudes of some residents towards urban possums were very highly polarised. While many residents prized

the possums visiting their properties, some residents viewed these animals as pests and were willing to go to considerable lengths to get rid of them. The present study was designed to elicit more specific information on the attitudes of residents towards urban possums as well as fulfilling an educational role: to disseminate information on a larger project investigating the factors influencing the occurrence of possum road-kill in the northern suburbs of Sydney (Russell 2009; Russell *et al.* 2009). This study also sought information about possum species distribution and abundance at the urban bushland interface and to identify potential threats to urban possums.

Methods

The study was conducted in 2005 along two roads within the Ku-ring-gai municipal council area in the northern Sydney suburbs, including the suburbs of West Pymble, Wahroonga, Turramurra and East Lindfield. Two additional roads were surveyed in 2007. The chosen roads (Lady Game Drive, The Comenarra Parkway, Bobbin Head Road and Ryde Road) are situated between Lane Cove National Park to the south ($33^{\circ}41'34''S$, $151^{\circ}09'25''E$) and Ku-ring-gai Chase National Park to the north ($33^{\circ}39'09''S$, $151^{\circ}09'20''E$) and represent a roadside environment ranging from low rise suburban housing to suburban housing interspersed with native bushland. These roads were also targeted in the larger ecological survey on possum road-kill (Russell *et al.* 2009).

Six hundred surveys were delivered to residences along these roads, allowing each residence an equal opportunity to participate in the survey. These residences were door-knocked and residents, who were home and willing to participate, filled out the survey on the spot and were given background information about this study and of the concomitant larger project on road-killed possums in the area (Russell, 2009). When no-one was home a copy of the survey was left either under the door or in the mail box along with a prepaid self addressed envelope facilitating ease of return. A cover letter with a brief statement of introduction and an outline of the project was on the front page of the survey.

Investigators' contact details, complaints procedures and ethical guidelines were printed on the inside page as well as photographs and descriptions of the targeted species i.e. both the Common Brushtail Possum and the Common Ringtail Possum. Check boxes were provided for participants to identify which road and which section of road they lived on (roads were divided into halves or thirds depending on length so that sections could be easily identified). Additional information could be provided (e.g. recipient's name, address or email address) if further information was required or if residents agreed to be contacted in regard to the study. The length of time that residents had lived in the area was also asked. Printed on all surveys was a guarantee of anonymity as per Macquarie University's human research ethical guidelines.

The questions were designed with multiple aims in mind; to inform residents of the larger road-kill project in the area (Russell *et al.* 2009), to gauge people's responses to a conservation initiative to prevent road-killed possums, to

gauge reactions at seeing dead possums on the road and to determine whether cars were seen as a threat to possums. Attitudes towards possums on people's properties were explored to gain an insight into how possums were viewed i.e. pest or guest and how they were treated (e.g. fed by residents, provided with an alternative living space i.e. nest box, largely ignored, removed and/or relocated).

The questionnaire was developed after consultation with possum researchers. Issues raised during these consultations were developed into questions which were then piloted on a variety of respondents in order to ascertain that the questions were clear and unambiguous with no obvious omissions or non sequiturs. Part one of the questionnaire consisted of ten questions (Table 1) where respondents were given a choice of categorical answers (e.g. yes/no, brushtail or ringtail possum, daily, weekly, monthly etc). The second part of the survey (Table 2) was comprised of 11 statements with a choice of five answers ranging from 1 (strongly agree) to 5 (strongly disagree) with 3 being neutral.

Results

Of the 600 surveys distributed, 197 surveys were completed representing a return rate of 33 %. This result compares well with return rates from other community based wildlife surveys, 28 % (Miller *et al.* 1999), 12 % (Lunney *et al.* 2000), 36-77 % (Miller and McGee 2000), 57 % (FitzGibbon and Jones 2006) and 26 % (Hill *et al.* 2007). Answers to both parts of the questionnaire were calculated as percentages of responses as not all questions were answered by all respondents (Table 1).

The majority of survey respondents (88 %, n = 185) reported that they had possums on their property. Ringtail possums were more commonly reported by residents with 62 % of people answering that they were on their property compared to 51 % identifying brushtail possums on their premises. Sixty nine percent said that they encountered (either heard or saw) possums weekly.

On the question of overall possum abundance, residents were asked whether or not they thought that there were now more possums than 6 months ago (4%, n = 174), more than 1 year ago (6%), more than two years ago (14%) or no change (69%). Unfortunately the response 'less possums than previously' was omitted; however, 5% of respondents to the above question added their own category that there are now less possums than before. Residents surveyed had lived on their properties on average for 15 years (range 0.25 – 60 years) which provided a good opportunity to closely observe the animals over long periods of time. In 71 % of responses to the question 'where do possums live on your property' (n = 185), the possums reportedly inhabited trees; 25 % of respondents stated that possums lived in their roof and 4 % had possums living in nest boxes provided by house holders.

Significantly more respondents (55 %, n = 179) agreed that possums were welcome on their property than those who disagreed (27 %) $\chi^2 = 17$, df = 1, p = < 0.0001. In addition, 82 % of respondents (n = 184) agreed that possums have a right to exist in the urban environment,

while 9 % disagreed ($\chi^2 = 107.52$, df = 1, p = < 0.0001). Thirty-five percent agreed that possums are a nuisance, compared with 47 % who disagreed. Twenty percent of participants (n = 182) answered that they had had a possum removed from their premises, of this group 52 % said that they had removed the possum themselves, 24 % sought help from a wildlife organisation and 24 % had possums removed by licensed pest controllers. The majority of respondents (68 %, n = 183) thought that possums were "cute" as opposed to 15 % who disagreed and 17 % who remained neutral. Twelve percent of people surveyed (n = 188) admitted to feeding possums and 77 % enjoy living with the wildlife in the area, including possums. Of the 13 % that disagreed with this statement a number of people admitted to enjoying living with wildlife – except for possums.

On the question of pets, 19 % of participants (n = 190) had dogs that stayed out at night, 3 % had cats that stayed out at night, 29 % had animals that were kept in at night and 49 % had no pets. Cars were seen as a threat to possums by 70 % of people (n = 177) and 57 % felt upset at seeing a dead possum on the road (n = 168), 40 % were neutral and 3 % of people complained about road-kill to the local council or other authority. When asked whether or not residents would support an initiative to protect possums in the area, 57 % agreed and 17 % disagreed ($\chi^2 = 36.3$, df = 1, p = < 0.0001). In response to the question of whether residents would like to know more about living with possums (n = 172), 42 % agreed and 23 % disagreed ($\chi^2 = 8.58$, df = 1, p = 0.0034).

Numbers represent percentages of participants answering the corresponding statement. Percentages vary as not every resident responded to every statement.

Discussion

In a similar, but independent survey, Hill *et al.* (2007) polled residents of the northern Sydney suburb of Mosman regarding human-possum conflicts. Both the present study and that of Hill *et al.* (2007) reported that the majority of respondents (88 % and 98 %, respectively), recorded the presence of possums on their property. These figures suggest that possums are relatively abundant in the northern suburbs of Sydney, but there are no definitive population or home range estimates for possums in this environment. Previous studies have reported home ranges ranging from 0.3 – 8.6 ha for brushtail possums (Statham and Statham 1997; Harper 2005) and 0.15 – 2.6 ha (Kerle 2001) for ringtail possums. Therefore many residents may be reporting on the same animals as individual possums are not restricted to one property and are likely to travel through numerous properties, thus rendering these data ineffectual to calculate an index of abundance from this type of survey. Notwithstanding this caveat, brushtail and ringtail possums are two of the most frequently encountered native mammals within the northern suburbs of Sydney.

The community at large appears to have an affinity with wildlife and nature. A number of urban wildlife surveys have revealed that wildlife is highly valued and that there is an overall willingness for further information to be received on both urban wildlife and nature as a whole (Miller 2003; FitzGibbon and Jones 2006; Hill *et al.* 2007; Wilks *et al.* 2008). The results of this survey and others (Hill *et al.* 2007; Wilks *et al.* 2008) suggest that possums are valued by the majority of survey participants in northern Sydney and that many people are interested in learning how to live with and protect them.

Table 1. Part one of questionnaire.

Question	Possible answers	Number of responses
Do you have possums on your property?	Yes No	163 22
If yes are they	Ringtails Brushtails	114 94
How often do you see possums on your property or your neighbour's property?	Daily Weekly Monthly Never	63 61 37 17
How many possums live, or travel through your property?	I 1-2 2-5 More than 5	13 60 59 24
Do you have pets in your yard that are out at night?	Yes, dogs Yes, cats No, my animals are kept in doors at night No, I do not have pets	35 6 56 93
Do you feed possums on your property?	Yes No	23 165

Question	Possible answers	Number of responses
Have you ever seen a dead possum on the road in your area?	Yes No	167 19
If yes, has this made you	Upset Complain to council or other authority Neutral	95 8 65
Have you disposed of a dead possum in front of your property in the last twelve months?	Yes No	58 128
	I 2 3-5 >5	32 11 14 1
If yes, how many times	6 months ago 1 year ago More than one year ago No change	7 11 24 120
Do you think that there are more possums in your area than there were	Yes No	37 145
Have you ever had a possum removed from your property?	You Wildlife group (e.g. WIRES) Other (please specify)	19 9 9
If yes, who removed it?	Tree Roof Nest box	131 46 8
If you have possums on your property, where do they live?		

Table 2. Part 2 of the questionnaire

Statements	% Agree	% Neutral	% Disagree	Number of responses
Possums are welcome on my property	55	18	27	179
Possums are a nuisance	35	18	47	179
Possums have a right to exist in the urban environment	82	9	9	184
Possums are often killed on the roads in my area	70	17	13	179
I enjoy living with the wildlife in the area, including possums	77	10	13	182
Possums should be removed from urban areas	10	12	78	181
I would like to know more about living with possums	42	35	23	172
Possums are cute	68	17	15	183
Cars are a threat to possums in my area	69	17	14	177
Possums should be protected by law	49	32	19	180
I would support an initiative to protect possums in my area	57	26	17	182

Human-possum conflict

There are, however, a small minority of people not sharing these views. These conclusions are supported by Wilks *et al.* (2008), who, after exploring peoples' attitudes towards brushtail possums, determined that these animals are generally well liked, but were strongly disliked by a minority of people, with some individuals willing to act cruelly and beyond the law to rid their premises of possums. In a Victorian study on attitudes towards possums, the findings by Miller *et al.* (1999) contrast the two Sydney studies with a majority, 33% of those surveyed, expressing a negative attitude towards

possums, 25% were positive and 37% remained neutral. Possums inhabiting roof spaces, and the consequent noise and damage that can occur, appear to be the primary reason for negative feelings toward these animals (Miller *et al.* 1999; Eymann *et al.* 2006; Hill *et al.* 2007; Wilks *et al.* 2008). Brushtail possums are usually blamed for this behaviour, however ringtail possums are equally likely to inhabit roof cavities in Sydney's northern suburbs (Chris MacGreal, licensed possum removalist, pers. comm.). One quarter of respondents in this study reported possums inhabiting their roofs, compared with 58% reported by Hill *et al.* (2007). Of

these 20% (present study) and 66% (Hill *et al.* 1999) had the offending possums removed from their premises with over half of these removals, in both studies, being carried out by the resident. However, these removals are often unsuccessful, as possums leave scent trails (Kerle 2001) and, after the removal of one possum, another will readily replace it if the mode of entry is not sealed. One participant of the present study, after removing possums on three separate occasions from a relative's home (the animals had entered via an open chimney), felt strongly enough to write a letter stating '...native animals should be encouraged to live in the many National Parks.' People with negative attitudes to wildlife often have the belief that the 'bush' is for wildlife and the suburbs are for people (Wilks *et al.* 2008). It is not known where the resident relocated the above mentioned possums.

Translocation and nest boxes

It has been revealed (Eymann *et al.* 2006; Hill *et al.* 2007; Wilks *et al.* 2008) that people, including at least one known licensed possum removalist (Hill *et al.* 2007), will readily translocate possums away from their premises ignoring legislation which states that possums must be relocated within 50 m of the trap site (DECC 2008). This practice is likely to have negative animal welfare consequences, as relocated possums are not thought to fare well due to introduced predators, competition with conspecifics, and naivety of the new location (Pietsch 1994). However, relocating possums is a practice that is almost impossible to monitor as traps are readily available and people are secretive when committing these illegal activities (Eymann *et al.* 2006; Wilks *et al.* 2008). Therefore this practice is likely to be under reported within this survey. There is a need for wildlife agencies to closely monitor both licensed possum removalists and trap hire to ensure compliance to the legislation and to alert agencies to areas of high human-possum conflict. Only a nominal few residents had provided alternate accommodation i.e. a nest box, for possums. Although providing a nest box does not automatically guarantee that a possum will use it, it is currently the best and preferred management option in combination with reducing possum access to roof spaces. Introduced species (e.g. Common Myna birds *Acridotheres tristis* and European honey bees *Apis mellifera*) will readily colonise nest boxes (Harper *et al.* 2005) and residents need to be informed of preventative measures that can be taken (e.g. installing a box with an entrance shield to deter myna birds and the possible use of pesticides to remove colonising bees) (Gibbons and Lindenmayer 2002; Beyer and Goldingay 2006).

Threats to wildlife

Apart from habitat loss, one of the major threats to urban wildlife is from vehicle impacts, of which the cumulative effects on wildlife populations remain largely unknown (Bennett 1991; Lodé 2000; Clevenger *et al.* 2003; Dique *et al.* 2003). Almost 600 possums were identified as road-kill within the study area over a two year period (Russell *et al.* 2009). This figure would be an underestimate of the possum road-kill toll as animals may die away from the road after being hit and

residents will often remove them from in front of their properties. In this survey, 31 % of participants ($n = 58$) admitted to removing dead possums from the front of their premises – with 14 people having removed road-killed possums between three and five times. The majority of participants in this survey recognised cars as a threat to urban possums and over half felt distress at the sight of dead possums on the roads. Domestic pets are also a real threat to urban wildlife. The wildlife rehabilitation group WIRES (Wildlife Information and Rescue Service), took into care 1362 brushtail possums from the Sydney region in 1999 and 937 in 2004 (Matthews *et al.* 2004). The year ending June 2009, WIRES took 1276 brushtail possums into care and 1628 ringtail possums (WIRES 2009). The reasons for possums warranting intervention by WIRES was determined in only ~30 % of cases. However, from these figures, 8 % of ringtail possum and 0.8 % of brushtail possum injuries were attributed to cats, 2 % ringtails and 2.3 % brushtails to dogs and 4 % of ringtail possums and 7.2 % of brushtail possums were injured by cars (WIRES 2009). While both possum species appear to be abundant in Sydney's northern suburbs, the stability of these populations remains unknown. A number of residents perceived possum numbers to be in decline: only one tenth reported increased possum numbers within the previous two years. With the majority of respondents resident in the area for over 15 years, this may be a reasonably reliable indicator of change over time. There is no doubt that brushtail and ringtail possums have a large range in urban areas, but this does not automatically equate to over abundance and stability.

A large proportion of survey respondents were interested in gaining more knowledge on possum biology (64 %), and on how to live with possums (61 %), suggesting that further education may change some negative perceptions held about these animals (Miller *et al.* 1999). While information is readily available on living with possums, for example, via wildlife agencies and wildlife care organisations, there still remains a lack of knowledge by the general public on their biology, behaviour and how to co-exist with them (Miller *et al.* 1999; T. Russell pers. obs.). These findings suggest that there are opportunities for wildlife managers to educate a willing public and for human-possum conflicts to be mitigated by targeted information campaigns. Our policies of 'living with wildlife' will be more successful if information on urban wildlife is presented to the community at large: these data show that the majority, while interested, will not independently seek such information.

Future research

There is a need for detailed studies to be conducted on urban wildlife to determine their abundance and conservation status (van der Ree 2004). Possums are thought to be in decline throughout much of their natural range (Kerle 2001) and little is known of their density or population stability throughout urban Australia (Matthews *et al.* 2004). There is a need for further research to quantify and monitor possum numbers in urban Sydney.

Conclusion

Involving residents in urban wildlife surveys achieves a number of goals. It is one of the few ways to elucidate information on species' activities on private property. Including people in urban wildlife surveys can foster a sense of interest and ownership. There is widespread community interest in wildlife and nature, and one way

of bolstering community knowledge and support is by the provision of education about the ecology of wildlife in urban areas. All of this could potentially result in a reduction in human-wildlife conflicts. Giving residents the opportunity to participate in urban wildlife surveys is also a good way for scientists to communicate their research objectives, findings and conservation initiatives to a targeted audience.

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References

- Bennett, A. F. 1991. Roads, roadsides and wildlife conservation: A review. Pp. 99-117 in *Nature Conservation 2: The role of corridors*, edited by D. A. Saunders and R. J. Hobbs.. Surrey Beatty and Sons, Chipping Norton.
- Beyer, G. L. and Goldingay, R. L. 2006. The value of nest boxes in the research and management of Australian hollow-using arboreal marsupials. *Wildlife Research* 33: 161-174.
- Clevenger, A. P., Chruszcz, B. and Gunson, K. E. 2003. Spatial patterns and factors influencing small vertebrate fauna roadkill aggregations. *Biological Conservation* 109: 15-26.
- DECC (New South Wales Department for Environment and Climate Change). 2008. www.environment.nsw.gov.au/plantsanimals/RemovingAPossumFromYourRoof.htm Accessed April 2008.
- DeLacey, C. and Chamberlain, S. 2007. Planting for possums: prime pickings or prohibited provender? Pp.99-116 in *Pest or guest: the zoology of overabundance*, edited by D. Lunney, P. Eby, P. Hutchings and S. Burgin. Royal Zoological Society of New South Wales, Mosman, Sydney..
- Dique, D. S., Thompson, J., Preece, H. J., Penfold, G. C., de Villiers, D. L. and Leslie, R. S. 2003. Koala mortality on roads in south-east Queensland: the koala speed-zone trial. *Wildlife Research* 30: 419 - 426.
- Eymann, J., Herbert, C. A. and Cooper, D. W. 2006. Management issues of urban common brushtail possums *Trichosurus vulpecula*: a loved or hated neighbour. *Australian Mammalogy* 28: 153-171.
- FitzGibbon, S. I. and Jones, D. N. 2006. A community-based wildlife survey: the knowledge and attitudes of residents of suburban Brisbane, with a focus on Bandicoots. *Wildlife Research* 33: 233-241.
- Gibbons, P. and Lindenmayer, D. 2002. Tree hollows and wildlife conservation in Australia. CSIRO Publishing, Collingwood, Victoria.
- Harper, M. J. 2005. Home range and den use of common brushtail possums (*Trichosurus vulpecula*) in urban forest remnants. *Wildlife Research* 32: 681-687.
- Harper, M. J., McCarthy, M. A. and van der Ree, R. 2005. The use of nest boxes in urban natural vegetation remnants by vertebrate fauna. *Wildlife Research* 32: 509-516.
- Hill, N. J., Carbery, K. A. and Deane, E. M. 2008. Human-possum conflict in urban Sydney, Australia: public perceptions and implications for species management. *Human Dimensions of Wildlife* 12: 101-113.
- Kerle, A. 2001. Possums – the brushtails, ringtails and greater glider. University of New South Wales Press, Sydney.
- Lodé, T. 2000. Effect of a motorway on mortality and isolation of wildlife populations. *Ambio* 29: 163-166.
- Lunney, D., O'Neill, L., Matthews, A. and Coburn, D. 2000. Contribution of community knowledge of vertebrate fauna to management and planning. *Ecological Management and Restoration* 1: 175-184.
- Lunney, D. and Burgin, S. 2004. Urban wildlife management: forming an Australian synthesis. Pp.230-247 in *Urban wildlife: more than meets the eye*, edited by D. Lunney and S. Burgin.. Royal Zoological Society of New South Wales, Mosman, Sydney.
- Matthews, A., Lunney, D., Waples, K. and Hard, J. 2004. Brushtail Possum:"Champion of the suburbs" or "Our tormentors"? Pp. 159 – 168 in *Urban Wildlife: more than meets the eye*, edited by D. Lunney and S. Burgin. Royal Zoological Society of New South Wales, Mosman, Sydney..
- Miller, K. K., Brown, P. R. and Temby, I. 1999. Attitudes towards possums: a need for education? *The Victorian Naturalist* 116: 120-126.
- Miller, K. M. 2003. Public and stakeholder values of wildlife in Victoria, Australia. *Wildlife Research* 30: 465-476.
- Pietsch, R. S. 1994. The fate of urban common brushtail possums translocated to sclerophyll forest. Pp 239–246 in *Reintroduction Biology of Australian and New Zealand fauna*, edited by M. Serena. Surrey Beatty and Sons: Chipping Norton.
- Russell, T. C. 2009. The incidence of road-killed possums in the Ku-ring-gai area of Sydney, Australia. MPhil thesis. Macquarie University.
- Russell, T. C., Herbert, C. A. and Kohen, J. L. 2009. High possum mortality on urban roads: implications for the population viability of the common brushtail and the common ringtail possum. *Australian Journal of Zoology* 57: 391-397.
- Statham, M. and Statham, H. L. 1997. Movements and habits of brushtail possums (*Trichosurus vulpecula* Kerr) in an urban area. *Wildlife Research* 24: 715-726.

van der Ree, R. 2004. The impact of urbanisation on the mammals of Melbourne – do atlas records tell the whole story or just some of the chapters? Pp. 195-204 in *Urban wildlife: more than meets the eye*, edited by D. Lunney and S. Burgin, S.. Royal Zoological Society of New South Wales, Mosman, Sydney.

Wilks, S., Russell T. and Eymann, J. 2008. Valued guest or vilified pest? How attitudes towards urban brushtail possums *Trichosurus vulpecula* fit into general perceptions of animals. Pp.33-44 in *Too close for comfort: contentious issues in human-wildlife encounters*, edited by D. Lunney, A. Munn and W. Meikle. Royal Zoological Society of New South Wales, Mosman, Sydney.